

REMARKS

By the above amendment, claims 3 - 14 have been canceled without prejudice or disclaimer of the subject matter thereof and new claims 15 - 22 have been presented which are directed to other features of the present invention as will be discussed below.

Of the newly submitted claims, claims 15 and 19 are independent claims and are directed to the structural arrangement of the stage on which a wafer is supported as illustrated in Figs. 1, 4 and 5 of the drawings, for example. More particularly, claims 15 and 19 recite the feature of a plasma processing apparatus, as illustrated in Fig. 1 having a vacuum chamber 9 in which a stage for supporting a wafer 1 is disposed within a processing chamber inside of the vacuum chamber. As shown in Fig. 2, the stage includes a cooling jacket 14 through which a liquid coolant is passed, and an upper member in the form of a ceramics plate 15 having a protrusion portion, as more clearly seen in Figs. 4 and 5, on which a wafer is supported, the upper member being attached on the coolant jacket. In accordance with the present invention, a heater 16 is disposed within the upper member 15 and an outer circumferential end of the heater is disposed with respect to an outer circumferential end of the protrusion portion. That is, as shown in Fig. 5A, the outer circumferential end of the heater 16 is substantially aligned with the outer circumferential end of the protrusion portion so as to be positioned in a vicinity of the outer circumferential end of the protrusion portion whereas in Fig. 5B, the outer circumferential end of the heater 16 is positioned outwardly from the outer circumferential end of the protrusion portion. As described at page 9, line 27 to page 10, line 27, Fig. 5A shows a case where the heater 16 is disposed so that its outer diameter is substantially the same as that of the protrusion of the ceramics plate which arrangement is effective as a scheme for equalizing or uniformizing a wafer temperature distribution in the event that the amount of heat input from a plasma is large. On the other hand, in the case of the outer diameter of the heater of Fig. 5B being made larger than the outer

diameter of the protrusion of the ceramic plate to an extent that it extends and reaches a nearby portion of the outer diameter of the ceramics plate, it is possible to uniformly heat up almost the entire surface area of the ceramics plate and the wafer temperature distribution is readily made uniform in the event that there is no plasma heat input or a relative small plasma heat input. Thus, independent claim 15 and the dependent claims is directed to the structural arrangement of Fig. 5B whereas independent claim 19 and its dependent claims is directed to the structural arrangement of Fig. 5A and prevent the phenomena from occurring that heat leaks from an outer circumferential side of the upper member having the protrusion portion thereby to lower the temperature from the outer circumferential side of the upper member resulting in a temperature at an outer circumferential side of the wafer being reduced and resulting in a non-uniformity of the temperature distribution of the wafer. With the structural arrangement, as disclosed, leakage of heat from the outer circumferential side of the upper member can be suppressed to improve the uniformity of temperature distribution of the wafer. It is noted that the dependent claims further define the location of an electrode 17 with respect to the wafer and the protrusion portion as well as reciting the functional characteristics of the present invention.

Turning to the rejection of claims 3 - 5 under 35 USC 103(a) as being unpatentable over Ishii (US 5,581,298) in view of Jacobson et al (US 6,521,503) and the rejection of claims 6 - 14 under 35 USC 103(a) as being unpatentable over Ishii in view of Jacobson et al further in view of Batchelder (US 6,483,081), such rejections are considered to be obviated by the cancellation of claims 3 - 14 and the presentation of new claims 15 - 22. Insofar as such rejections may be considered applicable to claims 15 - 22, such rejections are traversed.

As to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of

obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Applicants submit that none of Ishii, Jacobson et al or Batchelder disclose or teach the feature of the stage including an upper member having a protrusion portion on which the wafer is supported and a heater disposed within the upper member and having an outer circumferential end thereof positioned "outwardly from an outer circumferential end of the protrusion portion of the upper member" as recited in claim 15 or "in a vicinity of an outer circumferential end of the protrusion portion of the upper member "as recited in claim 19 or the other recited features of the dependent claims.

Looking to Ishii, for example, assuming arguendo, that the susceptor body 6 may be considered an upper member, it is readily apparent that such susceptor body 6 does not have a protrusion portion on which the wafer is supported. Likewise, although a heater 16 is disposed within the upper member, it is readily apparent that an outer circumferential end of the heater 16 thereof is not positioned in relation to an outer circumferential end of the protrusion portion of the upper member, since such structure is not provided by Ishii. Thus, Ishii is not directed to the problem of heat leakage from an outer circumferential side of the upper member having the protrusion portion. As such, Ishii fails to disclose or teach the claimed features of independent claims 15 and 19 and the dependent claims thereof and applicants

submit that all claims patentably distinguish over Ishii and should be considered allowable thereover.

With respect to Jacobson et al, it is readily apparent that this patent also does not disclose a stage as claimed with an upper member having a protrusion portion and a heater being disposed in the manner defined. Thus, applicants submit that the combination of Ishii and Jacobson et al fail to provide the claimed features as set forth in claims 15 and 19 and the dependent claims thereof and all claims should be considered allowable over this combination of references.

With respect to Batchelder, hereagain, it is not seen that Batchelder discloses or teaches the structural features of a stage including an upper member having a protrusion portion with a heater disposed within the upper member and having an outer circumferential end thereof positioned with respect to an outer circumferential end of the protrusion portion of the upper member in the manner as recited in claims 15 and 19 and the dependent claims thereof. It is apparent that Batchelder like Ishii and Jacobson et al is not directed to the problem of heat leakage in the manner set forth or preventing the heat leakage so as to enable uniformizing the temperature distribution of the wafer. Thus, applicants submit that the combination of Ishii, Jacobson et al and Batchelder fail to provide the claimed features as set forth in independent claims 15 and 19 and the dependent claims in the sense of 35 USC 103 and all claims should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing

of this paper, including extension of time fees, to Deposit Account No. 01-2135
(500.41374CX2) and please credit any excess fees to such deposit account.

Respectfully submitted,



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